

Global Summit on **HIV-AIDS AND STDs**

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Mathematical study of drug effects through perfect adherence in HIV treatment with awareness programme**Priti Kumar Roy***Jadavpur University, India*

The influence of HIV/AIDS is enhancing day to day and spreading its effect throughout the world rapidly. To protect the humankind from the harsh of HIV/AIDS, we are to express the strategies for nurturing different possible control approaches. Application of perfect drug adherence in impulsive mode would guide us to accomplish an enriched quality of treatment. In this research of mathematical and computational methodology for formulation of mathematical modeling in impulsive way would be instigated through this work. Awareness campaigns driven through media also help the humanity to be conscious from spreading of HIV/AIDS. The awareness approach performs as one type of control measures. Analytical as well as numerical analysis of the model with perfect adherence in impulsive path with awareness analysis would enlighten the visions about the state of healthiness of human disease dynamics. We desire to optimize the drug dosage, if PI/RTI/HAART is to be explored in impulsive avenue with aware policy, so that maximum social welfares would be achieved for HIV infected individuals. This may progress our fundamental considerations to control HIV/AIDS in global perspective.

Technical details: Numerous precise tools and techniques execute at different stages for smooth tracking of the research work. There would be mainly three major segments for continuation of the complete shape of this research work. Those phases and the procedures comprised in the work are as follows: **Mathematical Outlook:** To formulate the mathematical model on the disease dynamics of HIV pathogenesis in human as a set of coupled non-linear differential equations in impulsive approach with the help of collected clinical/ experimental data from peer reviewed journals (specially medical) to stipulate the numerical values of various model parameters.

Analytical Features: We will implement the drug therapy with perfect adherence and observe the dynamics of the drugs applied on HIV infected patients. Analyzing the model in both absence and presence of the drugs, we would estimate the safe dosing interval and safe dosage and corresponding cell counts in extreme cases. We would take the drug dosage with perfect adherence on considering the derived condition of dosing interval and drug dosage, then cellular infection can be restricted and immune system acts properly. In addition, we desire to bring out in forefront the most sensitive model parameters, based on which the treatment policies can be administrated. Moreover our model dynamics consists of awareness campaigning. With the help of awareness policy, we would be able to restrict the occurrence of AIDS in absence of any preventive medicine. It would reduce the happening of AIDS though the cost effectiveness of this media driven campaigning policy is much more affordable for the common people of our society. **Numerical Representations:** Numerical simulations will carry out from the analytical results under formulated mathematical models for the determination of the drug dose and dosing intervals. From numerical point of view, our study would illustrate the drug dynamics that has a great impact on the treatment management. We would numerically furnish the safe dosing interval and safe dosage that would be beneficial for the contemporary treatment strategies. From numerical aspect also, we will establish the combine drug therapy would be more functional for treatment of HIV infected individuals.

Biography

Priti Kumar Roy is Professor in the Department of Mathematics, Jadavpur University, Kolkata, India. Earlier, he served several government colleges in different parts of West Bengal, India. He is an eminent member of several national and international societies like Biomathematical Society of India, International Association of Engineers, European Society of Clinical Microbiology and Infectious Diseases and European Society for Mathematical and Theoretical Biology. Professor Roy has received the Best Paper Award at the World Congress on Engineering 2010 in London. He was awarded with the "Siksha Ratan" Award in 2012. He is also Royal Society of Edinburgh and Poland Academy of Science Fellowship Awarde. He has published a significant number of research papers on control therapeutic approaches and host-pathogen interactions on infectious as well as noninfectious diseases to enlighten new insights on the subjects. With over 135 peer-reviewed research papers, more than 60 invited talk (abroad), 30 invited talks (India) in different International and national institute. 12 (Twelve) research scholars awarded PH.D under his guidance and supervision. He has published two books on "Mathematical Models for Therapeutic Approaches to Control HIV Disease Transmission" (Springer in 2015), "Mathematical Models for Therapeutic Approaches to Control Psoriasis" (Springer in 2019). He also edited three books on "Insight and Control of Infectious Disease in Global Scenario (by Intech Publishers)", "A collection of Writings Objective Articulation from Socio-Academic Spectrum", and "Mathematical Analysis and Application in Modeling" (Springer in 2020). His research interests are also devoted in epidemiological issues on the chronic infectious disease such as HIV, cutaneous Leishmaniasis and Filariasis, Bio-diesel Production, Enzyme Kinetics, Methanol Toxicity etc. Professor Roy also works on the neglected tropical disease like psoriasis and has formulated robust mathematical models on the dynamics of such disease.